

Working Capital Management and the Performance of Consumer and Industrial Goods Sectors in Nigeria

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Abstract

The paper investigates the impact of working capital management on the performance of selected companies listed on the Nigerian Stock Exchange using panel data for forty (40) firms from the consumer and industrial goods sectors of the economy. Return on assets (ROA) was adopted as proxy for firm performance while cash conversion cycle (CCC), average payment period (APP), inventory collection period (ICP), and average collection period (ACP) were adopted as proxies for working capital management. Estimation of the impact of the exogenous variables (cash conversion cycle, average payment period, inventory conversion period and average conversion period) on firm performance (endogenous variable) was based on the econometric technique of the Ordinary Least Squares. The study produced evidence of significant positive impact of cash conversion cycle, average payment period, and inventory conversion period on firm performance. There is also evidence of non significant negative impact of average conversion period on the performance of the selected firms. Parameter estimates were obtained at 10 per cent level of significance. Based on the above result, the study concludes that working capital management has significant impact on the performance of firms in the consumer and industrial goods sectors of the Nigerian economy. Industry managers are therefore advised to innovate efficient strategies for managing working capital so as to optimize its potentials.

Keywords: Firm performance, Working capital management, Exogenous variable, Endogenous variable.

Introduction

Effective management of working capital presents a crucial and challenging financing decision that firms have to make in their day-to-day management of operations. It involves taking strategic decision in managing the connection between the short-term liabilities and assets of a firm to ensure smooth and efficient operations. It can simply be explained as the act of managing investment/divestment in short-term receivables as well as managing the increase/decrease in short-term payables. Working capital management is said to be efficient if an organization is able to finance daily operational expenses and meet other short-term obligations at lesser costs (Angahar and Alematu, 2014). Barine (2012) opines that effective management of both short-term payables and receivables combined with long term assets is required to meet daily business operational activities. Both short term receivables and payables are the main elements of working capital. Corporate performance depends largely on the effectiveness of strategies adopted in managing working capital in an organization because of its importance to the sustenance of its daily operations.

The importance of working capital management to the realization of organizational objective is evident in literature. Horne and Wachowitz (2000) opine that efficient working capital management is crucial for consumer and industrial goods companies because most of their assets and liabilities are in the form of short term receivables and payables. Kargar and Bluementhal (1994) reveal that maintaining an optimal

balance between profitability and liquidity should be accorded high priority in planning the working capital structure of firms so as to reduce the likelihood of bankruptcy and corporate failure.

Raheman and Nasr (2007) aver that firms are in business to make profit while ensuring that liquidity is

at the optimum level. Maintenance of optimal balance between profitability and liquidity is therefore a crucial factor in determining working capital mix or structure for a firm. Since an optimal mix of working capital elements enhances firm performance, it follows therefore that effective working capital management ensures that shareholders get value for their investment.

The choice of the sectors selected for this study derives from their size relative to the Nigeria's GDP. For instance, while the consumer goods sector is the second largest sector in Nigeria, the industrial goods sector is the fourth (NSE Factbook, 2014). There are thirty two (32) companies under consumergoods sector while the industrial sector has 25 firms listed on the NSE as at 2015 (NSE Fact book, 2015). Both sectors play very active roles in the Nigerian stock market and contribute significantly to the nation's export. Also, both sectors contribute about 21% to Nigeria's gross domestic product (GDP). Due to the importance of both sectors to the growth of the Nigerian economy, we think their operations need to be examined more closely both at the firm and industry levels. Working capital management practice in these sectors was chosen as the focus of this study due, largely, to its critical role in organizational performance.

Our study contributes to prior literature on the subject area, especially in Nigeria, by extending its scope. Earlier studies on the subject area have largely focused on manufacturing (see for example, Akindele and Odusina, 2015; Angahar and Alematu, 2014; Emeni and Uruakpa, 2013; Barine, 2012). In terms of scope also, this study incorporates an extended time frame for robustness. Specifically, the study investigates the extent to which working capital management has impacted on the performance of both consumer and industrial goods sectors in Nigeria over the period 2006 to 2015.

Literature Review

Conceptual Issues

Working capital is an integral part of organizational performance, hence the importance often attached to its management. Effective working capital management ensures maintenance of optimal levels of working capital at any point in time. An optimum level of working capital is that level which supports daily operations without compromising efficiency. It does not expose the firm to losses associated with excess or inadequate working capital. Adequacy of working capital enhances operational performance of a firm thereby ensuring its continued existence while its inadequacy works in reverse. Akinsulire (2005) opines that working capital contains important items like inventories, receivables, payables and cash that are needed for an organization's daily operations. Padachi (2006) views working capital management as the availability of ready funds essential for the daily operational activities of an organization. Afza and Nazir (2009) posit that optimal use of working capital components is an essential aspect of the overall corporate strategy of an organization aimed at creating shareholders wealth. Raheman and Nasr (2007) also explain working capital management as the efficient combination of trade receivables and payables necessary to maximize profit for the organization.

Mathuva (2010) outlined the crucial aspects or components of working capital management to include management of trade receivables and payables, holding investible funds/cash and maintaining a certain level of inventories. He maintains that optimization of these working capital components determine to a large extent the performance of an organization.

Organizational performance, for the purpose of this study, is synonymous with corporate profitability, firm performance or financial performance. Dong and Su (2010) argue that financial performance is the main

objective of a corporate organization. It is measured as returns generated on the capital invested in the business.

Review of Empirical Literature

Lazaridis and Tryfonidis (2004) examined the effect of working capital management on the profit performance of one hundred and thirty one (131) Turkish companies listed on the Athens Stock Exchange. Data on the research variables covered the period 2001 to 2004. Proxies used in the study were average payment period, average receivables and inventories as the explanatory variables while the proxy for profitability was gross operating profit. They find positive effect of the explanatory variables on profitability.

Falope and Ajilore (2009) examined the impact of working capital management on corporate profitability of non-financial service companies quoted on the Nigerian Stock Exchange (NSE). The study examined fifty companies using data over the period 1996-2005. The study found a negative relationship between net operating profit (dependent variable) and the independent variables (average payment period, cash conversion cycle, average collection period and inventory turnover). The result also shows that firm size does not affect the financial performance.

Mathuva (2010) examined the impact of working capital management on corporate profitability of firms in Kenya. The study analysed a sample of 30 firms quoted on the Nairobi Stock Exchange for the periods 1993-2008 using the ordinary least square (OLS) estimation technique. He finds a negative impact of working capital management on firm performance. The study further shows a significant positive impact of average payment period on the performance of Kenyan firms. Sarbapriya (2011) studied the effect of working capital management on the profit performance of Indian manufacturing firms using a sample of three hundred and eleven firms. The study covered a period of 14-years. He finds evidence of significant positive impact of working capital management on the profitability of Indian manufacturing firms.

Alipour (2011) analysed the impact of working capital management on the corporate profitability of Iranian firms. The study investigated 1063 firms listed on the Tehran Stock Exchange for the period 2001-2006. The study shows that working capital management in Iran has significant negative impact on corporate profitability. The study suggests a reduction in receivables accounts and inventory order among Iranian firms.

Kulkanya (2012) examined the effect of working capital management on firm performance for companies listed on Thailand Stock Exchange using a sample size of 225 companies from 2007-2009. The study presents evidence of negative impact of receivable collection and inventory conversion periods on gross operating profit.

Walter et al (2014) sought to ascertain the extent to which the profitability of listed non-financial services companies in Zimbabwe is affected by management of working capital. The study used a panel data for the period 2009-2013. They find positive relationship between firm performance and debtor's collection period. The study also shows significant negative effect of debt to asset ratio and firm value on profitability.

Angahar and Alematu (2014) studied the effect of working capital on the profit performance of the Nigerian cement sub-sector. The study investigated four (4) cement companies quoted on the Nigerian Stock Exchange for the period of 8 years, from 2002-2009. The study shows non-significant negative effect of number of days account receivable are outstanding on firm profitability. It also reveals a significant positive effect of cash conversion cycle on the profit performance of the selected firms.

Makori and Jagongo (2013) examined the effect of working capital management on the profitability of selected firms from the manufacturing and industrial goods sectors in Kenya over the period 2003-2012. The result shows negative impact of number of days account receivable are outstanding and cash

conversion cycle on corporate profitability. There is also evidence of positive impact of number of days' inventory and accounts payable on profitability.

Hypotheses Development

Cash conversion cycle: Cash conversion cycle (CCC) is an indicator for measuring the effectiveness of a company's management and by extension the overall health of the company. Elizalde (2003) opines that

cash conversion cycle is an important component of working capital management because firms need funds to operate in a competitive environment. Effective management of cash conversion cycle, therefore, is crucial for the survival of an organization. Cash conversion management is an essential financial indicator of corporate health and performance. Dong and Su (2010) assert that the overall measure of working capital management efficiency is linked to efficient cash conversion cycle management. This study therefore predicts thus:

H₀1: Cash Conversion Cycle (CCC) has no significant positive effect on firm performance.

Average payment period: The period it takes an organization to pay off outstanding bills or suppliers' invoices outstanding to their credit is known as average payment period (APP). The longer it is the more funds an organization has to support daily operations. Pandey (2005) posits that APP is a major source of funds for financing working capital for most organizations. Effective management of APP can therefore boost firm performance. Therefore, this paper predicts that:

H₀2: Average Payment Period (APP) does not have significant positive impact on firm performance.

Inventory conversion period: The average period it takes an organization to realize cash invested in inventory is referred to as inventory conversion period. It is also explained as the period taken to procure raw materials, process them and then sell off the finished products. Pandey (2005) views proper management of inventory as a major component of working capital structure in any organization.

Filbeck, Kruege and Preece (2007) opine that an optimal inventory conversion period will reduce excessive or inadequate inventories. Maintenance of optimal inventory levels ensures efficient utilization of capital and hence promotes firm performance. This paper therefore hypothesizes that:

H₀3: Inventory Conversion Period (ICP) does not have significant positive impact on firm performance.

Average collection period: The time a credit sale is made and the time cash is received from the buyer or debtor is known as average collection period. Refuse (1996) explains average collection period (ACP) as the period which a firm allows credit to be enjoyed by customers for the services rendered. A good credit policy seeks to reduce the time between the completion of sales and receipt of payments. Srivastarva (2004) posits that real profit can be generated after receivables are turned into cash. This study thus predicts that:

H₀4: Average Collection Period (ACP) has no significant positive effect on firm performance.

The joint effects of the independent variables presented in model 5 are tested for validity or otherwise of the null hypothesis. Hypothesis 5 is therefore presented thus:

H₀5: The independent variables (CCC, APP, ICP and ACP) have no significant positive effect on firm performance.

Methodology

This study is longitudinal in nature because it involves repeated observation of the same subjects or variables over a 10-year period (2006-2015). The population under study relates to all companies in the consumer and industrial goods sector as at 31st December, 2015 which number 57 (Nigerian Stock

Exchange Factsheet, 2015). The sample size consists of 40 companies selected from the population. Data was collected from the companies' financial reports and African financials website for the periods of 2006 to 2015. Ordinary least square (OLS) regression method and Pearson correlation were used for the study.

Research Variables

Independent variables: Working capital management is the independent variable. However, average payment period (APP), cash conversion cycle (CCC), inventory conversion period (ICP) and average collection period (ACP) were adopted as proxies used to measure working capital management.

Dependent variable: Organizational performance is the dependent variable. Return on assets (ROA) was adopted as proxy for organizational performance.

Control variables: These are variables whose effects need to be neutralized in order to limit their influence on both the dependent and independent variables. They include (i) sales growth denoted as GROWTH (ii) debt ratio denoted as LEV (iii) total assets denoted as SIZE (iv) current ratio denoted as CR.

Model Specification

The study adopts the model in Makori and Jagongo (2013) which was used to estimate the effect of working capital management on corporate profitability in Kenya. The model comprised of a set of equations, each designed to capture the effect of one indicator of working capital management on firm performance and then the fifth incorporating all the proxies for working capital management.

$$ROA_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 GROWTH_{it} + \beta_3 LEV_{it} + \beta_4 CR_{it} + \beta_5 CCC_{it} + \epsilon_{it} \dots\dots\dots(1)$$

$$ROA_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 GROWTH_{it} + \beta_3 LEV_{it} + \beta_4 CR_{it} + \beta_5 APP_{it} + \epsilon_{it} \dots\dots\dots(2)$$

$$ROA_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 GROWTH_{it} + \beta_3 LEV_{it} + \beta_4 CR_{it} + \beta_5 ICP_{it} + \epsilon_{it} \dots\dots\dots (3)$$

$$ROA_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 GROWTH_{it} + \beta_3 LEV_{it} + \beta_4 CR_{it} + \beta_5 ACP_{it} + \epsilon_{it} \dots\dots\dots (4)$$

$$ROA_{it} = \beta_0 + \beta_1 CCC_{it} + \beta_1 APP_{it} + \beta_1 ICP_{it} + \beta_1 ACP_{it} + \beta_2 SIZE_{it} + \beta_3 GROWTH_{it} + \beta_4 LEV_{it} + \beta_5 CR_{it} + \epsilon_{it} \dots\dots\dots(5)$$

Empirical Analysis and Discussion of Findings

Table 1: Summary of Descriptive Statistics

Variable	Mean	Median	SD	Min.	Max.
ROA	0.175	0.147	0.129	-0.074	0.412
CCC	51.442	47.123	50.002	-90.493	195.421
APP	91.421	84.213	47.237	16.792	232.495
ICP	85.412	76.419	42.902	25.291	201.247
ACP	51.516	49.020	29.274	7.472	156.792
SIZE	17.274	16.847	1.920	10.724	15.824
GROWTH	0.172	0.152	0.122	-0.423	0.844
LEV	0.452	0.574	0.314	0.216	0.869
CR	2.742	1.920	2.838	0.942	15.721

Source: 2006-2015 Survey Data, SPSS Output & E-View

From the above table, Return on assets has a mean value of 17.5% with a standard deviation of 12.9%. The mean value of average payment period (APP) is 91.421 days with a standard deviation of 47.237 days. The

table also shows that it takes 85.42 days, on the average, to convert inventories into sales with a standard deviation of 42.902 days. The mean value for average collection period (ACP) is 51.516 days. The implication of ACP (51.516 days) being lower than the APP (91.421 days) is enhanced liquidity since firms take shorter period to collect outstanding payments than they have to pay outstanding debts.

Table 2: Correlation Matrix

	ROA	CCC	APP	ICP	ACP	SIZE	GROWTH	LEV	CR
ROA	1								
CCC	-0.289**	1							
APP	0.498**	0.240	1						
ICP	0.275**	-0.249*	0.486**	1					
ACP	-0.514	0.155**	0.385**	-0.398*	1				
SIZE	0.287**	-0.472	0.077**	-0.558**	0.763**	1			
GROWTH	0.145	0.157	0.241	0.246	-0.018	0.43*	1		
LEV	-0.474**	0.698	-0.335*	-0.497**	-0.075	0.233	0.421*	1	
CR	0.174	0.187	-0.001	0.389*	-0.471**	-0.299*	0.148	-0.477	1

2006-2015 Survey Data, SPSS Output & E-View

Table 2 shows a positive or direct relationship between the dependent variable (ROA) and the independent variables (APP, ICP, SIZE, GROWTH and CR). The positive relationship between ROA and APP implies that the later the firms pay off outstanding bills the better. Firms can therefore choose to settle their bills as late as possible and thereby employ the credit in other productive areas, earning more returns in the process. For the firm, this may seem an efficient management approach but the danger is that suppliers may react negatively to the practice leading to inventory shortages and eventual decline in earning capacity. The positive association between ICP and ROA is an indication of management efficiency because cash is not unproductively tied down at the procurement, production or sales stages. This result is consistent with the work of Blinder & Maccini (1991).

Table 2 further reveals evidence of a negative relationship between ROA and the independent variables namely CCC, ACP and LEV. Observed negative association between ROA and ACP indicates that as debtors pay their obligations to the firm within shorter periods, return on assets is enhanced. The implication is that firms would have more cash available to run their operations and replenish inventory on time, thereby, leading to increase in sales which positively impacts profitability and hence performance. The negative relationship between ROA and CCC shows that there is shorter period between dispensing of cash (for instance, when raw materials were sourced) and realization of cash (the collection of sales of finished goods) thus making for increased profitability.

Regression Analysis

Table 3 shows the result of multicollinearity test conducted on the data to ascertain the degree to which any two explanatory variables change with respect to each other. A serious case of multicollinearity makes it difficult to determine the individual effect of each explanatory variable on the dependent variable.

Table 3: Robustness check / variance Inflation Factor (VIF)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
CCC	1.809				1.729
APP		1.410			1.450
ICP			1.581		1.301
ACP				1.910	2.292
SIZE	2.292	1.296	1.297	1.291	1.591
GROWTH	2.874	1.784	1.864	1.869	1.742
LEV	1.574	2.492	1.481	1.599	1.802
CR	1.092	1.096	2.201	1.207	2.174

Source: 2006-2015 Survey Data, SPSS Output

The result shows that VIF ranges from 1.092 to 2.292 which are far lower than the upper limit of 10. These indicate that the explanatory variables are not strongly correlated; hence there was no problem of multicollinearity (Gujarati & Songeetha, 2008 and Lind, Marchal & Wathen, 2010).

Table 4 shows the regression estimates for all the models. From the Durbin-Watson statistics, there is evidence that all the variables tested show no evidence no presence of autocorrelation. The regression results were then evaluated against the research hypotheses to determine the validity or otherwise of the null hypothesis. The hypotheses were evaluated at 10 per cent level of significance.

Table 4: Regression Result

Dep. Variable: Return on Assets (ROA)					
Ind. Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	- 0.412(0.021))*	-0.214(0.160)*	- 0.114(0.410) *	- 0.161(0.376)*	- 0.391(0.001)*
CCC	0.001(0.081))***				0.161(0.001)* *
APP		0.002(0.000)***			0.002(0.000)* *
ICP			0.001(0.000) ***		0.003(0.412)* *
ACP				-2.945(0.945)	-0.004(0.150)
SIZE	0.031(0.001))***	0.151(0.001)***	0.025(0.000) ***	0.047	0.018(0.060)* **
GROWTH	0.172(0.001))***	0.112(0.004)***	0.141(0.001) ***	0.153(0.01)** *	0.150(0.000)* **
LEV	- 0.294(0.001))***	-0.261(0.000)***	- 0.181(0.000) **	- 0.171(0.01)** *	- 0.312(0.000)* *
CR	0.007(0.054))***	0.003(0.411)***	0.007(0.031) ***	0.004(0.312)	0.003(0.119)
Adjusted R ²	0.472	0.392	0.571	0.429	0.621
F-Value	9.248 (0.001)***	14.741 (0.000)***	12.412(0.000))***	8.495(0.000)* **	16.125(0.000))***
D-W Statistics	0.974	1.121	1.149	0.921	1.111
Firm Years	400	400	400	400	400

Source: 2006-2015 Survey Data, SPSS Output & E-View

Test of Hypothesis

Hypothesis 1 (H₀₁): Cash Conversion Cycle (CCC) does not have significant positive impact on firm performance.

The result shows a significant positive impact of CCC on ROA. The implication is that a shorter CCC positively impacts firm performance. Thus, the null hypothesis (H₀₁) is thereby rejected. This result aligns with the study of Shen & Soenen (1998).

Hypothesis 2 (H₀₂): Average Payment Period (APP) does not have significant positive impact on firm performance.

The regression result shows a significant positive effect of APP on ROA. It also confirms the correlation result for ROA and APP. The result suggests that the longer the APP the better for the firm as it is enabled to take advantage of available cash for its operations. Thus, the null hypothesis (H₀₂) is rejected for model 2. This result is, however, in contrast with the prior work of Raheman & Nasr (2007) and Sharma & Kumar (2011). Their findings show a negative impact of APP on ROA.

Hypothesis 3 (H₀₃): Inventory Conversion Period (ICP) has no significant positive impact on firm performance.

The regression result shows evidence of significant positive impact of ICP on ROA, an indication of positive effect of efficient working capital management on return on assets. Based on the result of this test, the null hypothesis (H_03) is rejected. This result however does not support the finding in Garcia- Turuel & Martinez (2007) and Padachi (2006).

Hypothesis 4 (H_04): Average Collection Period (ACP) does not have significant positive impact on firm performance.

The result shows a non-significant negative impact of ACP on ROA. This is an indication that shorter ACP enhances return on earning assets while longer periods diminish returns, hence an evidence of lax working capital management. This result supports our null hypothesis (H_04) and it is thereby not rejected. This finding is not consistent with the studies of Filbeck et al. (2005) and Gakure, Cheluget, Onyango and Keraro (2012).

Hypothesis 5 (H_05): Model 5 tests the control variables along with the explanatory variables. The result indicates that CCC, APP, ICP, SIZE, GROWTH and CR have significant positive impact on ROA while ACP and LEV show a negative impact on ROA. This result indicates that firm size, growth in sales and optimal debt financing contribute positively to increase in firm performance. For hypothesis 5, the null hypothesis of non-significant positive impact of the independent variables on the dependent variable is rejected for CCC, APP, and ICP but not rejected for ACP.

Summary of Findings, Conclusion and Recommendation

Empirical evidence from this study shows that cash conversion cycle (CCC), average payment period (APP), and inventory conversion period (ICP) show significant positive impact on return on assets (ROA). However, average conversion period (ACP) shows a negative impact on return on assets. Also, the control variables adopted in this study (size, growth, leverage, current ratio) have significant impact on financial performance of firms selected for this study.

Following from the results presented above we conclude that working capital management has a significant impact on the performance of firms in the consumer and industrial goods sectors of the Nigerian economy. In view of the identified role of working capital in enhancing firm performance, industry managers are advised to innovate efficient ways of managing working capital to optimize its potentials. Efficient working capital management ensures maintenance of optimal levels of inventory at a point in time.

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